



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/571,996	03/15/2006	Tatsuya Matsumura	46884-5459	5583
55694 7590 11/28/2007 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209			EXAMINER SANEI, MONA M	
			ART UNIT 2882	PAPER NUMBER
			MAIL DATE 11/28/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/571,996

Applicant(s)

MATSUMURA ET AL.

Examiner

Mona M. Sanei

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/15/06 and 8/24/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because Figure 15 incorrectly labels the silicon foil "450." The correct reference number for the silicon foil is "440." Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities: in para [0002], line 1, "processing" should read "process" and in para [0002], line 5, "beryllium" should be spelled "beryllium." Appropriate correction is required.

### ***Claim Objections***

Claims 1 and 7 are objected to because of the following informality: In claim 1, line 5, "the closed" should read "said closed." In claim 7, line 3, "through-holes each" should read "through-holes, each." Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7, line 2 recites the limitation "said side." There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernacki (US 4119855).

Regarding claims 1 and 6, Bernacki discloses an x-ray tube (10) comprising a closed vessel (22) having an opening for defining a transmission window (24), an electron source (12), arranged in the closed vessel, for emitting electrons (14), an x-ray target (18), arranged in the closed vessel, receiving the electrons emitted from the electron source (fig 1) and generating the x-rays (20), and a silicon foil constituting the transmission window and having a thickness of 3 um or more but 30 um or less (col. 2, lines 35-38).

Regarding claim 2, Bernacki discloses wherein the silicon foil is directly affixed on a part of the closed vessel defining the opening while covering the opening of the closed vessel (col. 2, lines 35-38, Fig. 1).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki as applied to claim 1 above and further in view of Karnezos et al. (US 4632871).

Bernacki discloses an apparatus as recited above, wherein the silicon foil covers the opening (of the transmission window) (col. 2, lines 35-38).

However, Bernacki fails to disclose wherein the closed vessel has a glass faceplate containing an alkaline ion and having an opening for defining the transmission window, wherein the silicon foil is directly affixed on the glass faceplate for defining the opening by an anodic bonding and wherein the glass faceplate has a minimum outer diameter larger than a maximum outer diameter of the silicon foil.

Karnezos et al. discloses an apparatus having a glass faceplate (130) containing an alkaline ion (col. 1, line 13) and having an opening (105), wherein silicon (100) is directly affixed (see Fig. 4B) on the glass faceplate by an anodic bonding (col. 3, lines 52-57) and wherein the glass faceplate has a minimum outer diameter larger than a maximum outer diameter of the silicon (see Fig. 4B).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Bernacki to include a glass faceplate with the silicon foil attached by anodic bonding as suggested by Karnezos et al. since one would have been motivated to make such a modification to support and provide strength to the silicon foil and to establish a permanent bond which is extremely flat (see abstract).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki as modified by Karnezos et al. as applied to claim 3 above, and further in view of Suzuki et al. (5,161,179).

Bernacki as modified by Karnezos et al. discloses an apparatus as suggested above.

However, Bernacki as modified by Karnezos et al. fails to disclose wherein the glass faceplate has a sectional shape where a thickness of a peripheral part thereof is thinner than that of an inner side part thereof defining the transmission window.

Suzuki et al. teaches a circular frame which has a sectional shape where a thickness of a peripheral part thereof is thinner than that of an inner side part (13a, figure on front page).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the apparatus suggested by Bernacki and Karnezos et al. to incorporate the shape of the glass faceplate such that the thickness of the peripheral part thereof is thinner than that of an inner side part as suggested by Suzuki et al. since one would have been motivated to make such a modification to provide a secure inlet to place the silicon foil (figure on front page, Suzuki et al.).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki as applied to claim 1 above, and further in view of Ukita (US 2003/0185344 A1).

Bernacki discloses an apparatus as recited above.

However, Bernacki fails to disclose wherein the x-ray target is deposited on the surface of the silicon foil of the side facing the closed vessel.

Ukita teaches an x-ray tube wherein an x-ray target (15) is deposited on the surface of a transmission window (16) of the side facing the closed vessel (10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Bernacki by depositing the x-ray target on the surface of the transmission window (which consists of a silicon foil) as suggested by Ukita since one would have been motivated to make such a modification to provide a more direct path for the x-rays during their departure from the x-ray target.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernacki as applied to claim 1 above, and further in view of Nishikawa (US 5039203).

Bernacki discloses an apparatus as recited above.

However, Bernacki fails to disclose wherein the opening of the closed vessel has a mesh structure so that the transmission window is divided into a plurality of sections and wherein the opening of the closed vessel is composed by a plurality of through-holes, each corresponding to the transmission window.

Nishikawa teaches an apparatus which has as a mesh structure so that a transmission window is divided into a plurality of sections (col. 1, lines 6-9; Fig. 1A) and an apparatus which is composed by a plurality of through-holes (col. 1, lines 6-9; Fig. 1B), each corresponding to a transmission window.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Bernacki by incorporating either a mesh structure or a plurality of through-holes to the opening of the closed vessel as suggested by Nishikawa since one would have been motivated to make such a modification to prevent the silicon foil from being warped or curved and to impart improved compression strength to the silicon foil to protect against fracture (see abstract).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mona M. Sanei whose telephone number is (571) 272-8657. The examiner can normally be reached on M-W 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

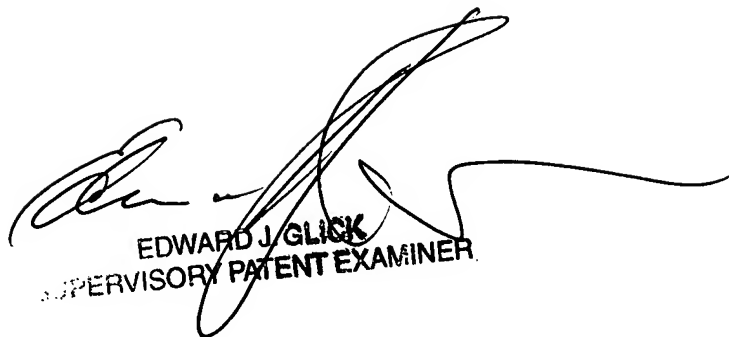
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Application/Control Number:  
10/571,996  
Art Unit: 2882

Page 8

MMS/11/26/2007



EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER